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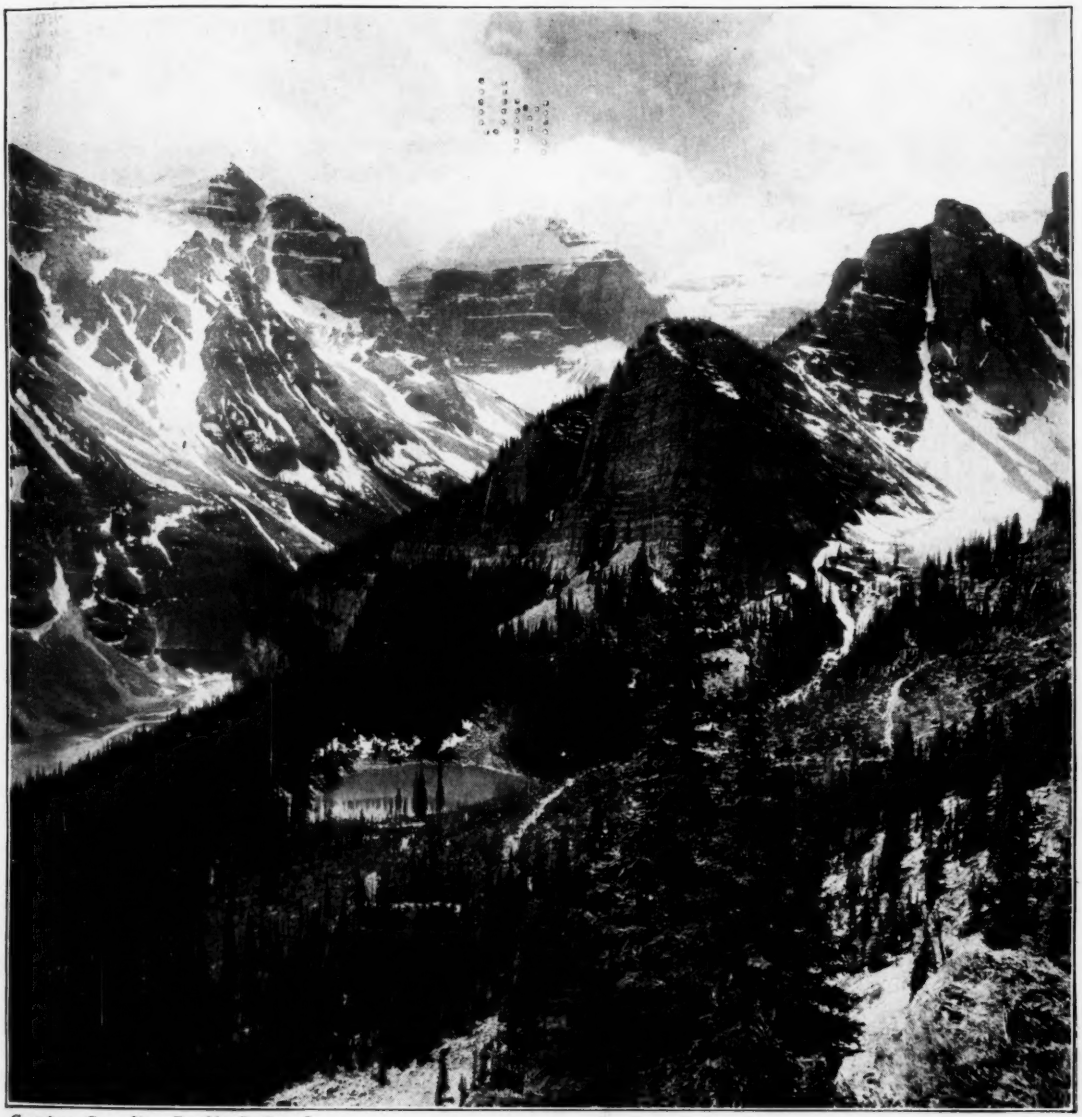

Courtesy Canadian Pacific Railroad

Lake Agnes, Nestled Among Spruce Trees and Guarded by the Rugged, Snow- and Wind-Swept Titans of the Canadian Rockies

Published by A. J. NYSTROM & Co., for THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

THE JOURNAL OF GEOGRAPHY

A MAGAZINE FOR SCHOOLS

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CORA P. SLETTEN, *Assistant Editor*
State Teachers College, Mankato, Minn.

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General
Wahr

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Mr. Wilbur is Sub-Master, William E. Russell District, Boston, Massachusetts. He was formerly directly associated with the cotton manufacturing industry of New England.

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Dr. Jackson is an associate professor of geography and geology in Hillsdale College, Hillsdale, Michigan. To the November, 1924 *Journal* he contributed, "Geography as a Correlating Subject in the High School," and to the March, 1926 *Bulletin of the Philadelphia Geographical Society*, "Early Uses of Land in Rhode Island."

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Mr. Bergsmark was formerly an assistant in the department of geography at the University of Minnesota. He is now a Fellow in the University of Chicago and is pursuing graduate study for his doctorate.

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Mr. Davis is an instructor in Van Nuys High School, Los Angeles, California, and a frequent contributor to the *Journal*. "Catamarca: The Arizona of Argentina," appeared in December, 1920, and "The Seaports of San Francisco, Los Angeles, and San Diego," in April, 1922.

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Dr. Bratton is an associate professor of geography at the University of Missouri and the author of several articles of geographic nature, some of which have been published in the *Journal*. In addition to such articles he is also the author of two books dealing with the geography of Missouri. His latest book (1926) bears the title "Missouri: A Geographical Reader."

A Geography Pageant. By Helen V. De Laplane 39

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Authors alone are responsible for opinions and statements in the *Journal*.

IF opinions and extent of use mean anything, Brigham and McFarlane's *Essentials of Geography* are without a peer.

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VOLUME XXVI JANUARY, 1927 NUMBER 1

COTTON MANUFACTURING IN THE SOUTH

HOWARD WILBUR

William E. Russell School, Boston, Massachusetts

In the early days textiles were manufactured in the home. Not until about 1813, when a small seventy spindle mill was established at Lincolnton, North Carolina, at a cost of $1300, did the industry in the South begin to lose its hallmark of domestic production. The beginning at this time may have been due somewhat to the encouragement given textile manufacturing by the embargo laid on English goods in the war of 1812. The South, however, found farming with slaves much more profitable than cotton manufacturing and the growth therefore of the industry was spasmodic, migratory, and not of a solid nature. Some little manufacturing was carried on by men who had foreign industrial habits and traditions back of them in communities populated by Swiss, Scotch-Irish, and Germans or by those who came from the industrial atmosphere of New England. The spirit of manufacturing was in this way kept alive altho the industry did not especially prosper.

With the invention of the cotton gin cotton took a tremendous leap and slavery along with it for more cotton and more labor were necessary to supply the gins and keep them running. "Cotton is King" became the maxim of the South and that portion of the population which under other circumstances might have taken root in industrial enterprise within the South was driven into the piedmont area and isolated from the sections into which slaves were crowding in order to avoid competition with slave labor.

The civil war brought about a great change in southern industry and about 1880 after a period of recuperation and reconstruction cotton manufacturing developed rapidly.

OPPORTUNITIES FOR DEVELOPMENT

The principal geographical reasons why cotton manufacturing should prosper in the South are as follows:

1. Abundance of water power, coal and petroleum resources

The South is fortunate in possessing an abundance of water power which may be converted into electrical energy. Before the application of the steam engine and electric motor drives, the cotton mills were necessarily located on water power sites. This was an important factor in the establishment of the cotton manufacturing industry and we naturally find the early mills situated on the fall line. Now, owing to the great hydroelectric development of the South and the present network of power transmission lines the new cotton mills being built can be located advantageously with relation to transportation facilities, adequate labor supply, and the many other benefits offered by a desirable location. As yet, only about 30 percent of the water power in the southeastern states has been used.

The fact that the principal coal beds of the North extend into the southern states and that much of the petroleum of the country comes from the South gives the section added possibilities of power for manufacturing.

2. Plentiful supply of excellent labor

Labor of sufficient quantity and quality has never been lacking in the history of southern cotton manufacturing. The great reservoir of pure-blooded Anglo-Saxon, English speaking mountain people of western North Carolina and South Carolina, eastern Tennessee, northern Georgia, and northern Alabama, dammed up by the growth of slavery, is now the great assest of the textile industry in the South. These mountain people have no traditions which tend to make them despise the capitalist and there is a mutual understanding and good feeling between employer and employed which has resulted in the mountain people welcoming the opportunity to move from a situation of abject poverty into a comfortable home at the mill. This type of help tends to become established and permanent and is of the greatest value to the industry. The population of the upland country is about three million and it is estimated that fully one-fourth of these would immediately move to town if they were sure of finding work. This means that there will be enough good labor for years to come for all the mills that are built.

3. Proximity to growing cotton.

More than one-half of the world's cotton supply still comes

from the southern states. The southern manufacturer is therefore nearer his raw material and, other things being equal, it is perfectly natural for the industry to locate there. No state, however, consumes all the raw cotton it raises as the best manufacturing results are obtained by mixing cotton from various sections. There is a cost for transportation in the South which nearly equals that of the North.

4. Mild climatic conditions

Milder climatic conditions favor the South as compared with the North. This means a reduction in fuel, clothing, and food bills for the operatives and makes it possible for the employer to pay less for labor without sacrificing the employees' standard of living.

5. Nearness to markets

Considering the factor of location in relation to markets the South has a decided advantage over many parts of the world. It is near the tropics where almost the sole material for clothing is cotton. Over seventy-five million people in thirty-seven states constitute the natural market for the products of the southern textile mills. As industries diversify and cities enlarge in the South local markets will also develop.

6. Good harbors and navigable rivers

For commercial purposes the good harbors at Norfolk, Virginia, Wilmington, North Carolina, Charleston, South Carolina, Savannah and Brunswick, Georgia, Jacksonville and Pensacola, Florida, Mobile, New Orleans, and Galveston furnish a series of ports difficult to surpass. A large proportion of the navigable rivers of the United States are also found in the South.

7. Good railroads

The Southern Railway system is the most extensive group south of the Potomac and Ohio rivers and forms a network of intermediate density thruout the South. Altho transportation by rail may be improved greatly both in speed and service there exists an important nucleus for further development.

DISADVANTAGES AND HANDICAPS

While the South has its advantages it also has its share of disadvantages as well.

1. Practically all of the important textile machinery plants are

located in the North and it is necessary to ship machinery for new mills and replacements at considerable expense.

2. Not many years ago bleaching, dyeing and finishing plants were thought impracticable in the South on account of the poor quality of the water. This has been overcome to some extent by digging wells and by filtration processes so that a beginning in textile finishing development has already taken place in the South. Only about 10 percent of the finishing plants are located there at this writing.

3. The ravages of the Mexican cotton boll weevil have proved very disastrous to the cotton producing areas, have practically wiped out the long staple crop in the central states, have denuded the gulf coast states and have made irresistible approach to the sea island crop of the eastern states. In many sections of the South cotton has become a crop of the past, e. g., in the Pamlico Sound region of North Carolina the people have left cotton raising for oyster fisheries—all on account of the boll weevil. It is interesting to note that they are getting more for the oysters than they ever received for the cotton. These facts mean high prices for cotton on account of small crops in the face of insistent demand. It is plain, also, that if the ravages of the boll weevil continue, any advantage which the southern mill may have at present on account of being nearer the cotton areas may be effectively weakened.

4. The South is handicapped for the time being in not having experienced and skilled fine goods workers but judging from its former experience in developing labor for coarse and medium counts this will also soon be a thing of the past. Already the State College of Agriculture and Engineering of North Carolina is planning to secure the highest skilled instructors from England to teach the natives how to make the finest cotton goods in the world. The laboring people of the South are pure blooded descendants of the best stock of old England and Scotland and have ability to acquire skill when given the opportunity. The southern states are increasing their appropriations for educational purposes by leaps and bounds. There is a two year course in textiles at Clemson College, South Carolina, which has produced able designers and capable executives. Plans are under way for the establishment of a textile school at some central location in the piedmont region for the improvement of the mill workers. This means, at least, that the foundation of intelligent workers in southern industry will be secured.

5. Poor roads have hindered the South for some time. Steps are now being taken to overcome this detriment to commercial greatness. Good roads are now in process of construction. North Carolina—I cite North Carolina because of its place of leadership in the cotton manufacturing industry of the South—has spent $76,000,000 in three years to build 6,000 miles of concrete and macadam roads connecting all the county seats. As geographically, means of transportation and communication are exceedingly important for commercial greatness this is quite a progressive step for the South.

6. Largely because of lower operating costs northern capital has been encouraged to enter the South in the cotton manufacturing field especially within recent years. This means that the South is paying to northern capitalists a goodly proportion of profits annually as well as interest on money borrowed for the purpose of erecting mills. Many of the southern mills are owned or controlled by northern commission houses. This situation, primarily due to lack of southern capital, is gradually correcting itself and as the South increases its wealth its manufacturers will be able to borrow on better terms.

7. The high capitalization and per spindle cost of many of the southern mills as compared with New England is quite marked. Larger gross earnings in such mills of the South will be necessary in order that they may be on a paying basis. This may prove a handicap to the South in the future should wages and hours of labor be more nearly equalized than at present in North and South. Other things being equal, it is fair to assume that a larger margin of profit will be necessary for a reasonable return on the investment when a mill costs $40 a spindle in contrast to a cost of $10 a spindle. If equalization in operating expenses ever does take place in North and South it may mean either large northern profits or reorganization of capital structure in many of the southern mills. A spindle costing $40 would have to make four times as much as a spindle costing $10, under the same conditions, to show the same percent of return on the investment. This serious handicap may be overcome by proper foresight on the part of the southern mill managements in laying aside surpluses, made in good times, for a rainy day.

8. Industries using a large amount of cotton cloth are located in the North, e. g., tire companies and artificial leather companies, and it is more costly and slower to ship cloth from the mill to such

plants from the South than from the North. In partial realization of these facts we see the recent purchase of Rotch Mills, New Bedford, by the Fisk and Goodyear tire companies for the manufacture of tire fabrics and the Sanford Spinning Company, Fall River, by the Firestone Tire and Rubber Co. for the same purpose. These purchases were made after an exhaustive survey by the most expert of engineers working for the large tire corporations in all textile centers of the country.

9. Perhaps one of the greatest disadvantages to the South is the fact that it is off the shortest route to Europe and is therefore handicapped in export trade. The South is also too far away from New York City, the present trading center in this country for cotton goods, to land finished goods on spot orders as promptly as New England.

COMPETITION WITH THE NORTH

During peace times when raw cotton is cheap and the demand for finished products great, all the mills of the country can run at capacity with profit to supply this demand. With higher prices for raw cotton due to scarcity on account of short cotton crops and the ease with which speculation may be conducted as a result of such scarcity there is a noticeable tendency for the finished product demand to fall off in hesitation or refusal to pay the price necessary in order to manufacture at a profit. This is especially noticeable in staple cotton goods and in the North when during the recent depression caused by three consecutive short cotton crops which left the world without an adequate supply of raw material it was cheaper to keep the mills closed than to buy cotton and try to sell goods at the prices for which the South could produce them with their advantages of cheaper labor cost, lower taxes, and longer hours of work. The northern mills on the whole under such conditions cannot compete with the South successfully in the coarse goods trade.

A recent estimate of the cost of living places the advantage in favor of the southern operative as $7.80 a week—the advantages are in rent, clothing, food, and fuel—which means that if the southern operative gets $15 a week he can live as well as the northern operative who gets $22.50 per week. It stands to reason then that New England mills cannot successfully compete with southern goods on the basis of labor costs unless the cost of living

rises materially in the South or drops materially in the North. Labor cost is the chief item in cotton manufacturing and amounts to about 87 per cent of the total. The North cannot compete with the South unless this advantage is offset by some disadvantage. This explains in a measure why northern capital is rushing south-

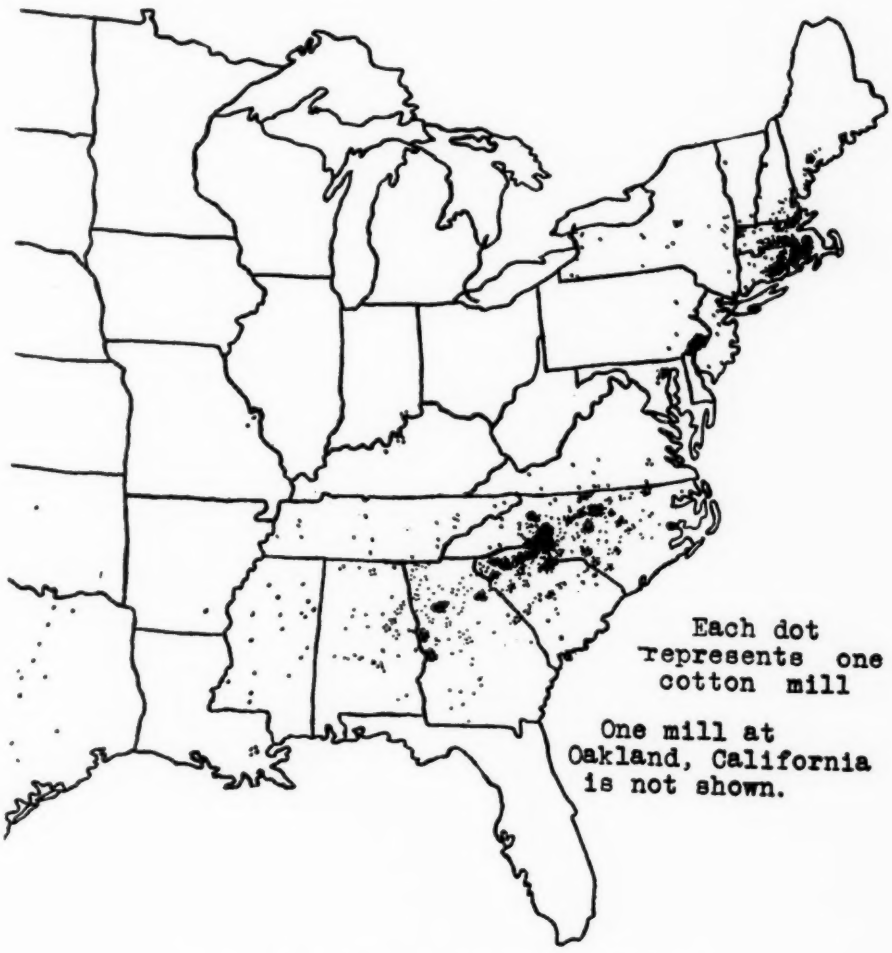

FIG. 1. Sketch map showing location of cotton mills

ward for the minor advantages of the North such as lower freight rates, closer proximity to markets, more surplus capital, lower interest rates, etc., are merely incidental as compared with the difference in cost of labor. In this connection the activity of the labor unions especially among the foreign element in the North

with resulting strikes, walkouts, etc., merely adds another thorn to the flesh of the struggling northern mills. The South is practically free from such agitation and discourages its entrance. These disturbances either for long or short periods generally mean a loss which may be directly charged to labor.

The legal limitations on the length of the work-day and work week for women in Massachusetts may be humanitarian from the sociological standpoint but in competition what chance has a state which limits the work-week to forty-eight hours with the other eighteen states in which the maximum is fifty-four or more hours? Overhead expenses are practically the same for one as for the other but with more hours of labor they are more widely distributed and the cost is therefore less per hour. The South has a decided advantage in hours of labor.

Table Showing Legal Hours per Week for Women

Massachusetts	48	South Carolina	55
Maine	54	Vermont	56
New Hampshire	54	Tennessee	57
Rhode Island	54	Virginia	60
New York	54	North Carolina	60
Pennsylvania	54	Georgia	60
New Jersey	54	Mississippi	60
Arkansas	54	Louisiana	60
Texas	54	Alabama	No limit
Connecticut	55		

More and more the northern mills are changing to fine goods and trying to overcome the situation by this method. There is a question, however, as to the permanency of this solution as the South is gradually working into the fine goods field and may in time cause the same trouble for the northern mills in fine goods as it has in coarse. The only way that the industry can exist in the North is by approximating the operating conditions of its competitors. Labor must be persuaded either to put in more work for the existing wages or to take less pay for the present weekly work. As the situation is now the northern mills producing competitive lines with the South can operate without curtailment only when the South has too much business to handle, then, the northern mills take the overflow. It is predicted that unless something is done about it soon the expansion of the cotton manufacturing industry will be in the South and the machinery of the mills in the North will be moved bodily to more favorably disposed localities. The

cost of moving is only $7 a spindle and the construction costs in the South are much less than in the North.

Many incentives are offered by the South to encourage the building of cotton mills in that section. Georgia, e.g., has passed a law exempting from taxation for a period of five years all new industries and all new additions to established industries. This exemption means a great deal to cotton manufacturing as it will permit the mills to get firmly established before beginning payment of taxes. The most critical period of an industry is during the first five years. Alabama and other southern states encourage the location of industry and welcome promoters by similar means. When compared with the excessive taxation of cotton mills in the North the South as a field for manufacturing has a decided advantage. In addition to this the ratio of assessed to actual value of real estate is less in the South and the rate of taxation is lower.

The real competition of the southern mills is not based, however, on longer hours or lower taxes but rather on the growing efficiency of the operatives who now produce fabrics upon which the New England mills formerly had a monopoly and on the lower cost of living in the South which enables less wages to be paid for the maintenance of a high standard of living.

PRESENT STATUS

Geographically, the cotton manufacturing industry is distributed as follows:

	Spindles
New England	18,248,752
Cotton-growing states	17,706,506
All other states	1,950,072
Total	37,905,330

It is noticeable that the mills of the South are mostly along the fall line and upon the piedmont plateau where water power is available.

Many of the southern mills are of small spindelage as compared with those of the North, thus, the 351 mills of North Carolina have 6,032,724 spindles while the 245 in Massachusetts have 11,615,478 spindles. A more exact method of comparison therefore would be by spindelage which represents true production power; 80.3 per cent of the spindles of the South are found in North Carolina, South Carolina, and Georgia.

Many of the southern mills are running day and night. The spindles of the South Atlantic states consume more raw cotton every year than any other textile mill center in the world. The annual consumption of the south even exceeds the consumption of Great Britain which has a spindelage three and one-half times greater. North Carolina uses more raw cotton than Massachusetts at present and the cotton growing states consume more than twice as much cotton as New England.

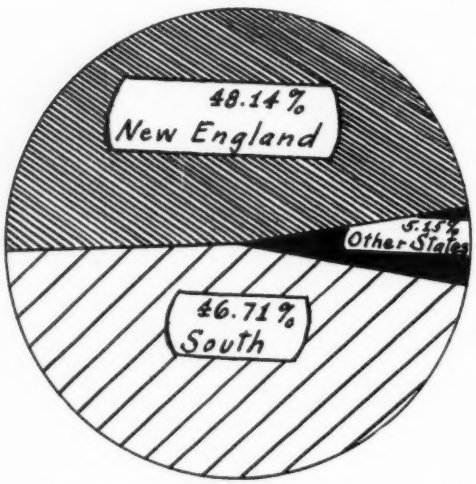

FIG. 2. Distribution of spindles in place in the United States October 31, 1925. (Based on figures in monthly report of U. S. Department of Commerce.)

Kannapolis, North Carolina, has the largest towel manufacturing plant in the world. Roanoke Rapids, North Carolina, has this country's largest damask mills. North Carolina manufactures more cotton goods than any other state except Massachusetts. Hosiery of the finest quality is produced in the Durham district, North Carolina, the largest center of this industry in the world. This state leads all others in the manufacture of denims, canton flannel, flannelettes and blanketings, towels and towelings, wash cloths, bath mats, wiping and polishing cloths (except pile fabrics), cotton table damask, sheets and pillow cases, and commercial yarns. It is second in the manufacture of tobacco, cheese, butter, bunting and bandage cloths, ginghams, shirtings (not silk striped), ticks, blankets, and cotton waste for sale.

South Carolina is second in the South and third in the United States in extent and importance of its textile industry.

The suitable filtration of southern surface water has been proved commercially practicable and bleacheries, finishing plants and dye works have sprung up thruout the South. If recent progress is any criterion the South may look forward to the time when its bleaching, dyeing and finishing plants will adequately take care of all the fabric manufactured there.

FUTURE POSSIBILITIES

If the cotton manufacturing industry in the South continues to grow at the same rate for the next ten or fifteen years as it has in the last twenty-five the South will have as many operating spindles as there are now in the entire country. At the present time the total number of spindles in the United States is more than enough to provide for our domestic requirements. Allowing for the natural increase in population as well as the increase in wants per individual there will be an excess of spindles over the possible requirements of those who buy from the domestic mills. This indicates that there must either be a decrease in the rate of increase of southern spindles or a junking or transfer of northern spindles or some other alternative not covered by these. Owing to the manufacturing advantage of the South over the North the first is not likely to any great degree. The second is going on at the present time to a certain extent and will probably continue but not so far as to make cotton manufacturing in the North extinct. There will probably be cotton manufacturing carried on in the North for years to come even in spite of high labor costs and material expenses. Only the fittest will survive. Consolidations, quantity production, labor, cost, and material saving machinery and devices, improved methods of marketing, and keen efficient management will be in evidence.

The types of goods which can be produced more cheaply in the South will gradually be eliminated from the North and only those goods which the North can produce at an equal cost or at less cost than the South will remain. It is conceded that the fine goods production and finishing will for many years remain in the North and production in the northern mills will probably go ahead at full speed in this kind of goods to compete with the English and continental mills in supplying the markets of the world. New England mills especially, being nearer Europe and the great seaports for international trade—New York and Boston—are better located than the southern to carry on this competition. Efficiency and economy will be the order of the day.

THE EARLY HISTORICAL GEOGRAPHY OF SAN FRANCISCO*

ERIC P. JACKSON
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INTRODUCTION

The evolution of man's adjustments to the natural environment in San Francisco is an excellent example of "geographic momentum" in an unfavorable area. Sutter's discovery of gold in California in '48 was primarily responsible for its frenzied and phenomenal growth from a quiet pastoral village to a large metropolis. The advantages of the situation and of the natural site were capitalized so far as possible, but from the point of view of urban development the physical disadvantages far outweighed the advantages and dictated certain necessary modifications in the environment. An examination of the layout of the city about 1856 brings this out vividly. Certain other villages on the bay, in some instances early rivals of San Francisco, were naturally better fitted for leadership, but nonenvironmental conditions determined which place was to have the advantage of the first trade. Not only was the import and export trade that grew up a powerful factor in the development of San Francisco but also the various phases of this trade during this period of a quarter of a century reflected the changing environmental adjustments in the region tributary to the city.

ADVERSE PHYSICAL CONDITIONS

The site, on the northward projecting peninsula, that came to be occupied by San Francisco was disadvantageous for urban development in a number of respects. A complex of rock hills, steep ravines, and sand hills is an obvious set of obstacles. Such conditions give rise to a low water table, to difficulties in working out a street pattern and in grading. Sand dunes are usually moving features of the landscape and must be either stabilized by vegetation or entirely removed. Only three restricted lowland areas were available as nuclei for settlement. The shoreline was not favorable for the best development of a port. The best anchorage for merchant vessels was a place of limited extent off the north-

* The author wishes to acknowledge the gathering of some of the facts for this paper by the members of an advanced class in Historical Geography at the University of Chicago.

ern end of the peninsula exposed to the prevailing winds. Yerba Buena Cove to the southeast offered a better haven but mud flats and shallow water presented problems that had to be overcome. In addition to these disadvantages timber was scarce, the scraggly chaparral being of little use. San Francisco, too, is exposed to the full force of prevailing winds from the west and the climate is to some extent adverse. Altho winter and summer temperatures are moderated yet the heavy nightly fogs in summer and the rainy season from the end of October until April with its severe storms lasting three or four days are assuredly not optimum climatic conditions. A disadvantage of situation was brought out by destructive earth movements even in the early days which showed the site to be located on an earthquake fault line.

These disadvantages were not of so much importance in the days preceding the gold rush, for the early villages adjusted themselves easily and unostentatiously to conditions as they found them. The three areas of flat land were the initial centers of settlement. The northern end of the peninsula was a natural point of defense at the Golden Gate, the seaward entrance to San Francisco, San Pablo and Suisan Bays, and here was located the presidio, or battery, by the Spanish as early as 1797. It was placed on a small semicircular plain flanked by rock hills. By 1824 vessels began to prefer the more sheltered Yerba Buena Cove to the exposed and dangerous presidio anchorage. This cove became the regular anchorage by order of the Mexican governor after about 1834. The next year a merchant named Lees secured permission to trade here, and he located on the nearest available flat land, a forty acre space near the future Portsmouth Square, back from the beach. By 1841 the Hudson Bay Company opened a branch in the village. The Mission Dolores was situated on the third bit of lowland three or four miles to the west of the cove. Outside of these limited areas all else was high rocky bluffs, chaparral and sand, mud flats and swamps.

Rivalry among the Villages

With the discovery of gold the human factors soon gave San Francisco the lead among the rival villages on the bay. Even earlier than this the necessity of reporting to the military authorities at the fort, or getting certain supplies from the Mission, and the advantages of trading at the village had begun to outweigh, for

example, the better facilities for wood and water at Saucelito on the opposite peninsula. Whalers, however, continued to stop at the latter place, altho later they found better facilities for repair service offered at San Francisco. The situation of Saucelito was quite comparable to that of San Francisco and its site offered certain advantages, altho high steep hills hampered its development. Benicia at the Strait of Carquinez aspired to leadership among the bay ports by reason of its advantageous position further inland at the head of navigation for larger ocean going craft. The harbor here could accommodate ships drawing 27 feet at high water and 22 feet at low water. It was obviously much better situated than San Francisco for communication inland with Sacramento, Stockton, and the gold fields. Military headquarters and the terminal and shops of the Pacific Mail Steamship Company were first placed at Benicia. The one natural disadvantage was the swampiness of the waterfront. When Alcalde Bartlett outwitted the leaders of Benicia (then Francesca) by changing the name of Yerba Buena to San Francisco, thus attracting trade by the commercial renown of that name, and when opposition in Congress prevented Benicia from becoming the port of entry, this rival soon retired to the humble status of a county seat. Among other and lesser rivals that shared with Benicia the advantage of easier communication with the interior were Vallejo with a good natural harbor, a good upland site for a city, and a favorable waterfront a half mile in length, and Martinez, which, however, was at a disadvantage because of the mud flats along the shoreline. Alameda and Oakland shared certain advantages of position but there was the necessity of constructing artificial harbor facilities. The nonenvironmental conditions which drew trade to San Francisco and gave her the position of leadership were later supplemented by the development of specialized port facilities, booster advertising, and result-

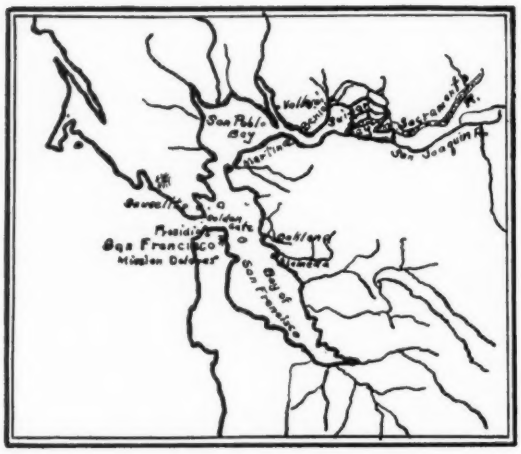

FIG. 1. Sketch Map showing the Situation of San Francisco

ing immigration, and by the establishment there of the assayer's office, the branch mint, and the custom house. With no easy or adequate land transportation the main reliance of this whole region was on the sea, and an interesting set of circumstances largely determined that San Francisco should become the great port at this natural gateway.

GROWTH OF SAN FRANCISCO AFTER THE DISCOVERY OF GOLD

The story of the mushroom growth of San Francisco after the discovery of gold is intensely interesting and shows strikingly the disadvantages of its site. The town spread out in a straggling crescent and a line of canvas buildings northward along Stockton Street. A larger number extended to the southwest shores of the cove beyond the Market Street ridge. This was called Happy Valley sheltered as it was from the west winds and provided with good spring water. The wet winter of 1849 made the town a veritable swamp. Traffic worked up the streets into a deep mire. There were no wharves extending out to deep water. Of the two wharves that did exist the larger reached out to only five feet of water at low tide. The smaller extended about thirty feet from Commercial Street and was used mainly for rowboats. The chief landing place was Clark's Point where deep water came close to a rocky shore. Many vessels were abandoned or beached for conversion into storage places or lodging houses. By the next fall an 800 foot wharf was built reaching out to deep water, and 1850 saw the building of approximately 6,000 feet of wharves at a cost of a million dollars. After they had been built out on the parallel streets of the bay, it was found convenient to build cross streets on piles enclosing the blocks. Many of the dismantled hulls were enclosed in this way. The problem of grading was especially acute in the city. The dry winters of 1851-52 facilitated building operations which were pushed with great rapidity. Due to hasty planning no adequate system of grades was established adapted to the rugged relief. The later extension of the city necessitated changes in grade so that many houses had to be adapted to the new level and in some cases new stories had to be put under or upon old houses. In the business district large brick structures (after 1860) were razed at great expense. A machine based on the principle of the hydraulic press was invented and was used in raising about 900 houses.

RAPID GROWTH AND ADJUSTMENTS

The years of 1856-57 mark the close of a period of phenomenally rapid expansion of the city during which man's adjustments had, except in one respect, effectively modified the natural site. The outstanding feature of the layout of the city at that time was the

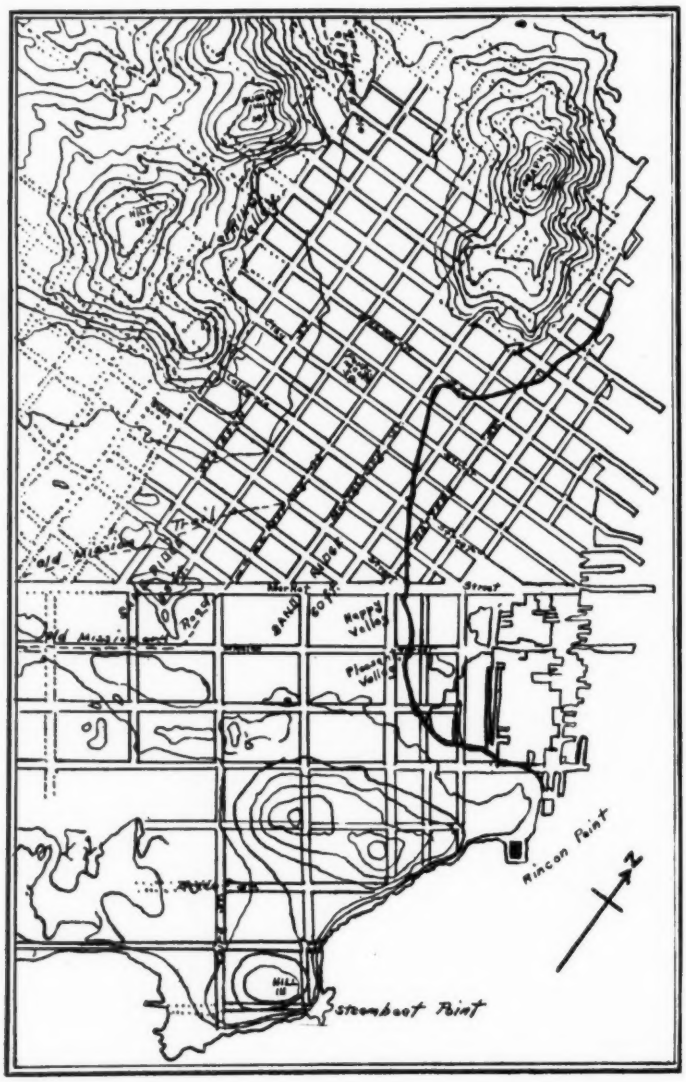

FIG. 2. The Layout of San Francisco in 1856-57, showing adjustments to the natural site. The heavy line shows approximate position of the old shore line of Yerba Buena Cove, subsequently filled in. (Generalized from maps in H. H. Bancroft, History of California, Vol. VI, pp. 169, 756

incongruity of a gridiron street pattern on an exceedingly hilly surface. This arrangement had been deliberately planned and had been firmly established beyond any chance of alteration by the rapid inflow of population. Contour lines were ignored and the three largest hills interrupted the continuity of the streets. The inhabitants could only reach their homes perched up on the steep slopes by weary climbs across ravines and up stairways. This maladjustment was distinctly apparent even in the early fifties. Yerba Buena Cove, the northern half of which had been at low tide a mud flat a half mile or so in width and the southern half a sandy beach, had been filled in with material from Telegraph Hill. This provided exceedingly valuable business sites and allowed for expansion eastward. In six years Portsmouth Square no longer occupied a central position, for the flourishing business district lay north of Market Street and east of Montgomery Street to the east of the shoreline of 1850. The hills in the north and west, from two hundred to four hundred feet high, effectually blocked the development of a business district in those directions. Furthermore, shipping was no longer handicapped by the old mud flats of the cove. Wharves had been built and extended and the land filled in, even around the hulks of old ships, until finally there had been developed facilities comparable to those off Clark's Point. Sea borne trade exerted a strong influence on the location of the business district, as illustrated by the building of the new Customs House at Battery and Jackson Streets and the offices of the Harbor Master and the steamship companies to the north and east of this. The wholesale district tended to move eastward but the retail district still clung to Montgomery and Kearney Streets, nearer to the residential districts. On the southern extent of the filled in cove and on the sandy stretches south of this there developed the factory district. Sand dunes, sixty to eighty feet in height, which stretched southward from California Street were removed. Here was room for further expansion, besides, it furnished port facilities. The poorer and foreign elements of the population clung to the steep and unattractive slopes of Telegraph Hill and some of the other hills relatively near to the business districts. There were two better residential districts situated further out, one along Stockton Street extending westward towards the slopes of Russian Hill to the northwest, and the other centering about Third and Bryant Streets separated by one of the larger hills from the factory district.

THE GROWING SEA BORNE TRADE

The trade of San Francisco was an all-important factor in the growth of the city and reflects accurately the changing adjustments within the rather extensive tributary area. The changes in the character and direction of the import trade for the quarter of a century from 1849 to 1874 are significant. In striking contrast to the meagre needs of the self-sufficient pastoral peoples of the forties were the urgent and vital needs of the almost exclusively male population of miners who came in '49 and the early fifties. Clothing, equipment (especially mining supplies), and food including such staples as salted meats, flour, beans, hard bread, coffee, sugar, and dried fruit all had to be shipped in to this relatively remote town. Even coin was scarce and came to be considered an article of merchandise. Later with the abundance of wealth and the establishment of households a greater variety of goods came to be in demand. So absorbed were the people by the gold craze that even houses and lumber were imported from Canton and elsewhere. With the rapid but sporadic inflow of merchandise in ships came a stream of immigrants from every land representing every class. Three months was the minimum time in which word could be carried to a market and the necessary goods returned. Consequently, there was often either a complete lack of certain articles or an inflow of shipments in excess of demand. During the wet season of 1849-50, for example, tobacco, iron, sheet-lead, cement, beans, and salt beef were the cheapest materials available for the construction of sidewalks and street crossings. This irregularity in supply and demand, due chiefly to isolation, gave rise to a corresponding fluctuation in prices, rents, and land values. The disadvantages of the situation of San Francisco for commercial development were not so pronounced at this early period as later. Nonenvironmental conditions were responsible for "directing to its shores the vast fleet of vessels which in 1849 began to empty here their myriads of passengers and cargoes of merchandise." This early start soon gave San Francisco the commercial leadership which she never has lost. In the early part of this period trade was directed to nearby ports along the Pacific coast for urgent supplies. Even the Farallone islands were ransacked for eggs. The trade, however, soon fell in with the main channel of commerce in the North Atlantic. Atlantic ports were the source of the main supplies of merchandise. This trade reached its peak in 1851-3 and was favored by a protective tariff.

INCREASING DEPENDENCE ON LOCAL PRODUCTS

A trend toward normalcy and self-sufficiency became evident by 1853. Imported cereals, grains, flour, and salted and cured meats were rapidly supplanted by home products developed by a growing agricultural industry. Rice, however, was still in demand by the increasing Chinese population. The relatively slow decline in the importation of dairy products was attributable to the local cost of labor and to speculative operations in grain and stock raising. Native fruits and wines began to compete, too. Other articles, especially coffee, tea, sugar, tobacco, clothing, and powder could not or were not as yet produced at home. Shipping was adversely affected by these changes, altho an increasing population and the development of resources on a nonspeculative basis helped to offset this. Furthermore, with the settlement of the area tributary to San Francisco as well as other areas on the Pacific Coast, this city became an entrepôt for the distribution of imported commodities. There developed an extensive coast trade and much of the overseas import trade became localized in this region. Lumber, for example, which was first brought from distant regions came to be imported from British Columbia and the Puget Sound and Columbia River sections of the United States. Likewise, ice was first supplied by Atlantic ports and there was a considerable loss because the equator was crossed twice in the course of the voyage. Later it came to be supplied more effectively from tide-water glaciers in Alaska, and finally some of it was even hauled overland from the high Sierras.

CHANGES IN OVERSEAS TRADE

There were certain inevitable changes in the direction of overseas trade. Arrivals from the Atlantic ports of the United States dropped considerably; traffic with Chile, which had been "the chief flour warehouse for California," declined; the trade *via* Panama and Nicaragua suffered some shrinkage. Imports from Mexico, China, the Pacific Islands, and the East Indies were sustained, consisting as they did of products like sugar, tea, rice, and fruits, that were not among the home productions. Wheat was no longer needed from Australia. With the return of cheaper prices even the old whalers began to make their appearance again in the harbor.

The import trade continued to develop until in 1874 San Francisco was the fourth city in the country in the amount of her importations. Her foreign imports totalled about two thirds, in value, of her imports from other ports in the United States. Regular

routes and schedules had been established with coastal as well as with overseas ports. There had been little further change in the character of commodities brought in; the significant thing is that the trade had become stabilized. The Civil War had discouraged importations from other American ports to some extent. Comparatively cheaper products were brought in, particularly by British ships seeking the fast growing wheat export of California. Some years later the opening of the Central and Union Pacific railroads revived the demand for American goods, especially finer articles of a costlier grade. Importations by sea did not suffer any decrease from railroad competition at this period, but continued to rise along with the increase of population and wealth. The disadvantage of the situation of San Francisco with respect to inland transportation was a powerful factor in delaying the growth of railroad importations to the city.

Likewise the export trade is a reflection of adjustments as well as a contributing factor in the growth of the metropolis. In general it was characterized by its meagreness and lack of variety. Immediately following the discovery of gold but little of the dust was exported, most of it being bartered there for necessities and luxuries. Furthermore, this would have been rather difficult because few ships left San Francisco and crews were almost impossible to secure. By 1853, however, it had come to be the regular practice to export gold and this continued to be the leading item of the export trade until 1861. Some preferred to carry their gold out privately, but with the improvement of banking facilities this was largely discontinued. Gold dust and bullion were shipped in large quantities. A rapid increase in the production of gold in the early fifties caused the gold exportation of California to rise to a high peak of $54,000,000. The yield of the California placers reached its high point in 1852 and the "flush times" were followed by decreasing yields. Gold exportations from San Francisco suffered a drop of $4,000,000 in 1854 and a further decline of $6,000,000 in 1855.

The Increasing Importance of Agriculture

Agricultural adjustments began to be reflected in the export trade. Many of the miners began to turn their attention to farming. The production of wheat and barley in California increased

"from less than 30,000 bu. in 1850 to over 8,000,000 bu. in 1856" and these commodities came to figure prominently in the export trade. Wheat, and later flour, were shipped in large quantities to Europe. The discovery of gold in Australia created some demand for California wheat, thus reversing the situation existing formerly between these two regions. By 1855 the value of the grain and flour exports from San Francisco was exceeded only by the value of the exports of treasure. Among the related commodities that entered into the export trade of this period were hides, wool, some fruit and wine. Pastoral industry at this time was on the range rather than the ranch basis, and fruit trees came to be planted with the development of irrigation in the later fifties.

Altho a greater number of people continued to turn their attention to farming and agricultural products increasingly entered into the export trade, after 1862 there was a great increase in the export of treasure. This is to be explained by the discovery of new gold mines and particularly by the opening up of the Comstock Lode in Nevada, the silver from which was carried over the Truckee Pass (also called Donner Pass) and then shipped out thru San Francisco. Silver came to be a leading item in the export trade.

SUMMARY

Thus the trade of San Francisco during this period was a series of evolutionary commercial adjustments closely dependent upon the social and economic conditions in the city and its tributary area. The gold rush brought a phenomenal and unusual import trade to the city. After the financial crash of 1853 there was rapid return to a more nearly self-sufficient condition in the region tributary to the city, accompanied by associated changes in the import and export trade. Thruout the whole period, moreover, the trade reacted, directly and indirectly, to promote the growth of the city. The development of the harbor facilities and of the commercial sections are directly attributable to the demands of trade. Likewise land values, and more particularly marketing and banking conditions were at all times more or less dependent upon trade conditions. Trade was the driving force in the evolution of San Francisco; it was trade that kept up the momentum of an early start in spite of environmental handicaps.

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THE GEOGRAPHY OF IMERINA, MADAGASCAR

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The province of Imerina is located on a plateau in Madagascar, near the eastern side of the island. The maximum width of the province is about 80 miles and it becomes narrower to the north and to the south, making it about twice as long as it is wide. On the south it is separated from the adjoining province, Betsileo, by a chain of mountains.

The borders of Imerina are higher than the land lying between them which gives the appearance of a central depression, the mean height of which is about 4,000 feet above sea level. This depression, however, is not a perfectly level piece of land but rather a chaos of hills and valleys, in form not unlike a stormy sea. Long stretches of ground are covered with a glittering red clay, from which granite and basalt project, but in some places there are green plains of fertile alluvial soil, and in all probability some of these plains out of which the red clay hills rise like islands, have formerly been the beds of extensive lakes, subsequently drained.

The climate of the province is moderate and healthful. Apart from the latitude the chief factors affecting the climate are the southeast trades and the elevation of the land. On these highlands the heat is never great. The mean annual temperature is about 65° F. at Antananarivo. The absolute maximum is 89° F., and the absolute minimum is 38°. The annual rainfall is given at 53.7 inches. The rainy season begins in November and ends in March.

During these months there is an average rainfall of 9.7 inches. The dry season lasts from April to October, with an average monthly rainfall of .71 inches.

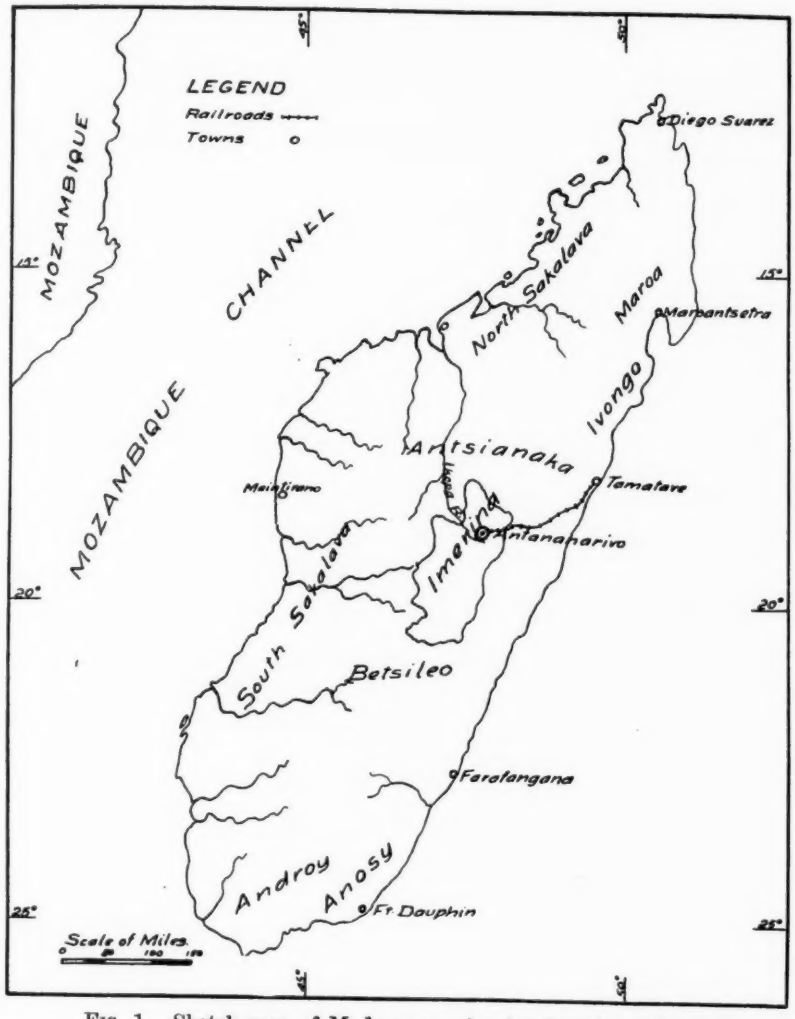

FIG. 1. Sketch map of Madagascar showing location of Imerina

The province of Imerina is occupied by a people known as Hova or Hovas.[1] These people are more numerous, industrious, ingenious, and wealthy than those of any other portion of the country.

[1] This word is more properly written Hova; since Malagasy words take no plural. However, our minds are trained to the plural ending, which will be used thruout this report.

ECONOMIC ACTIVITIES

There is a marked contrast between the economic activities in Imerina and some of the other portions of Madagascar—contrasts which are the result of different environmental conditions. One

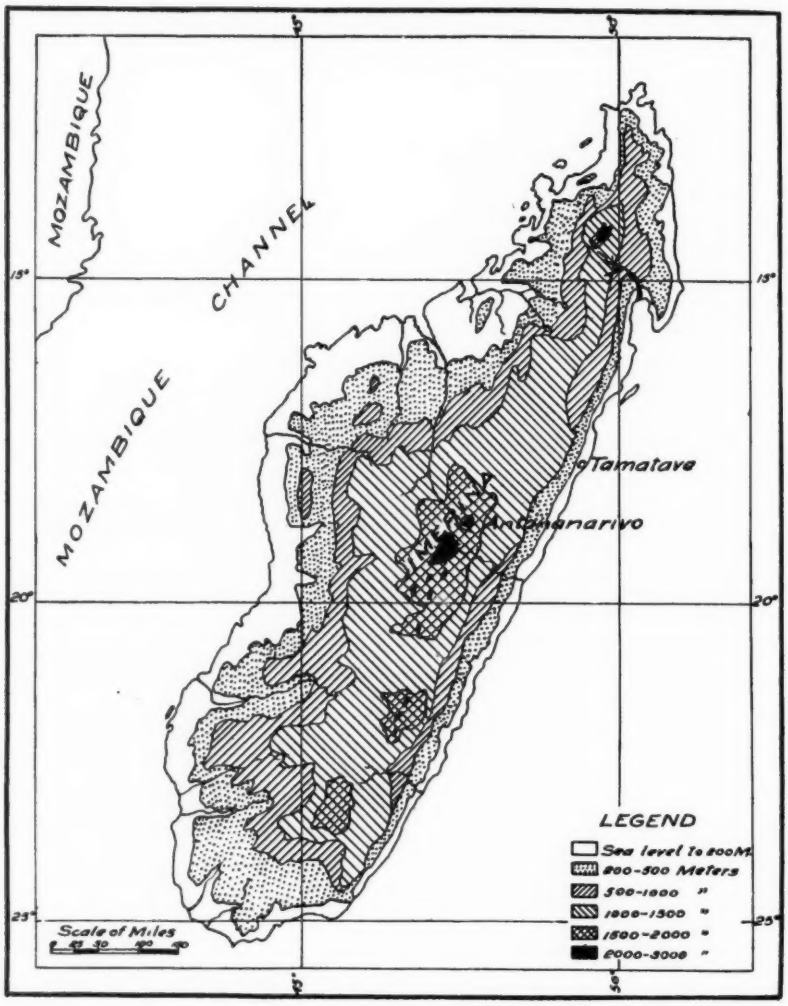

FIG. 2. Sketch map of Madagascar showing relief

would hardly expect to find the same activities on the lowlands along the eastern coast as in the interior highland of Madagascar. Nor do the people on the southwestern coast of the island follow the same pursuits as those on the eastern. The eastern coast receives an abundance of rain and has no dry season, since the south-

east trades blow at all times of the year and this portion of the country has a windward location. The south and southwestern coasts, on the other hand, which are low lying and partly in the lee of the eastern block of high land, are decidedly dry, almost arid, with as little as 16 inches a year in places.

Owing to the abundant rainfall dense forests are found on the eastern coast. The flora is very rich and varied, and contains large numbers of trees producing valuable timber as well as numerous species of palms, bamboo, tree fern, pandanus, baobab, tamarind, and uphorbia. In the interior the vegetation becomes quite different. In some of the numerous glens a luxuriant tropical vegetation is still to be found, but as a whole the interior is treeless, and consists chiefly of grass land. On the southwestern coast, arid and semiarid conditions are not favorable to forest growth. Forests abound however, in the river valleys and in the lowlands.

The chief employment of the people of Madagascar is agriculture. Crops such as rice and manioc are grown thruout the island. Rice is used less, however, by the western tribes than by those of the central and eastern provinces, the former people are more nomadic in their habits than are the others.

In Imerina every person has his rice field. Even the slaves grow rice for their own use. The culture of the rice fields occupies a large portion of the time of the people, and a great amount of skill and ingenuity is displayed. The principal centers of rice production are the plains of Antananarivo where the rice fields cover an area of approximately 150,000 acres.

The rice fields are of two kinds: first, those on which the rice is sown, and then those on which rice is transplanted and grows until it is reaped. The former are only narrow strips of ground along the banks of the rivers, or terraces on the sloping sides of deep valleys. Water is conveyed to them from the nearest springs by means of aqueducts, often carried in a most ingenious fashion for a considerable distance along the curving sides of the hills. This is necessary from the fact that rice is sown in the dry season, when there is no rain to afford the requisite moisture; for rice must be sown in water, and grown in water until it is ripe.

As soon as the rice plants have reached a height of six or eight inches, they are all taken up and transplanted, plant by plant, into the rice fields proper. These are much larger and more extensive pieces of ground covering the surfaces of the broader valleys and

alluvial plains. Antananarivo, the capital of Madagascar, is nearly surrounded by these alluvial plains. After being dug over, water is let into the fields, and after further working by the spade, and also by cattle driven to and fro over the ground, the plants are stuck into the soft mud by the female slaves. When the rice is freshly planted, and again when it is harvest time, it presents a beautiful spectacle, "the villages on the low red-clad hills rise like islands from a green or a golden sea."

Second only to rice in importance is manioc. Both climatic and

FIG. 3. Transplanting rice in Imerina. The rice is transplanted from hillside terraces to these lowland plains. Note the character of population and the conditions under which they work. (Photo by G. Grandidier)

topographic conditions favor its extensive cultivation. The growing season is sufficiently long so as to allow two rainy seasons for the crop; the first about the time of planting, and the other about the time of harvest. The manioc grows well on hillsides above the rice terraces. The greater part of the crop, however, is grown in level, enclosed fields. The fence consists of a bank of earth about three feet high.

Indian corn, oats, and wheat are grown almost everywhere in the vicinity of native villages. They are grown during the rainy sea-

son, from November to March. The present yields, however, could be considerably increased by better seed selection and methods of cultivation.

Coffee has been grown in the colony for many years, the central districts producing a variety of Arabian Mocha. Some years ago, however, the ravages of the borer insect obliged the planters to undertake the cultivation of a more resistant type, and Liberian coffee was introduced. With the gradual development of plantations, primitive methods of cultivation have given way to more modern systems, and machinery has been substituted for the inconvenient native implements.[2]

Animal Industries. Cattle hold a preeminent position in the circle of Malagasy ideas. They are used as beasts of sacrifice, at feasts, religious ceremonies, funerals, etc.; they are used in the rice plantations; the meat forms, after rice and manioc, the most important article of food; and the hides are shipped to the coast.

Some sheep and goats are raised. The sheep belong to the fat-tailed breed and are kept for their meat rather than wool. They were introduced from Africa. The goat flesh is eaten with relish, and the skins are exported.

Due to their superstitious beliefs, some of the natives take a dislike to goats and pigs. Repeated proclamations have been made about the latter animals, ordering their removal to a distance of several miles from the capital.

Sericulture. The rearing of silk worms occupies a large portion of the attention and time of many of the inhabitants. The silk worms of Madagascar are of a different kind from those of Asia—they are larger and very hairy. They feed upon the leaves of the pigeon-pea, called ambarivatry. The seed of this plant, which resembles the common pea, is generally sown in a space of ground from three to four acres in extent. When the plant is grown and in full leaf, the silk worms are introduced. They feed upon the leaves, and then spin out their silk in the open air.

Industries. Many changes are passing over native society. Trades and occupations are beginning to more sharply define the different classes of people, and increasing numbers are being chiefly occupied in distinct pursuits. At the present time we can find bootmakers and tailors, straw-hat manufacturers, leather workers, blacksmiths, coppersmiths, potters, etc.

[2] E. A. Welden, Madagascar, Commercial Report, No. 163, p. 12

Many of the inhabitants, chiefly women, are at times employed in making mats. These are made from rushes, or fine grass, and are woven by hand, after the manner of the South Sea Islanders. Baskets are manufactured of the same materials, and are in general use among the people. The baskets vary in size, the largest holding more than a bushel.

Another important occupation is the manufacture of earthenware. Clay is found in abundance thruout the province. Large jars are made for holding water, or fetching it from the streams. They are polished with a substance resembling plumbago, found in several of the provinces.

The making of rope and twine furnishes occasional employment. They use no wheels for this purpose, but twist the hemp, or other material of which the cordage is made, with their hands. Besides the native hemp, the bark of the hibiscus and a species of long and tough grass, are also used. The twine and cordage is used in the manufacture of fishing nets and lines, in tying together the frame work of their houses, and in many articles of furniture.

Transportation. Until very recently, there were no roads and railroads in Imerina connecting it with the coast. Most of the produce was carried by the natives thru the thick forests on the eastern slope of the island. The building of roads by the natives in former times was hindered because they facilitated the movement of an enemy and permitted an intercourse which was held to be undesirable.

The French began the construction of a system of roads in recent years. Within a decade a railway has been built from Antananarivo, the capital, to the principal port, Tamatave (229 miles); and is being extended farther inland.

Commerce. The trade has increased rapidly in recent years. This development may be attributed to several factors: (1) the establishment of plantations with the growth of the white population, (2) building of the railroad and better roads, and (3) education resulting in higher standards of living. The principal exports of the province are rice, cattle, coffee, raw hides, and meats. The imports are clothing, machinery, cotton fabrics, wine, paper, cork, and automobiles.[3]

[3] E. A. Welden, Madagascar, Commercial Report, No. 163

SOCIAL ACTIVITIES

Population. Imerina is the most densely populated province of Madagascar—approximately 700,000 people live on 10,000 square miles of land. The cool, bracing climate of the country where the Hovas dwell has had its influence upon them. The soil is less fertile than the soil in the warmer coastal plains, hence more energy and continuous labor are needed to produce the necessities of life. This has produced a more robust and self-reliant spirit among the Hovas, who have at length become the dominant tribe of the island.

FIG. 4. One of the villages of Imerina. The houses in this portion of Madagascar are built of the hard red earth which is so abundant in the hills of this province. These barren hills also furnish protection against attacks by enemies. (Photo by G. Grandidier)

One noteworthy characteristic of the population is its distribution. The natives have a tendency to group. The groups build their houses on the tops of the hills which are so numerous in the province. The hills furnish valuable material for building purposes, and serve as points of defense from the attacks of enemies. At the present time, however, the people feel a greater sense of security and are coming down from the hills.[4]

Housing. As previously noted, the houses are made of clay. The clay is laid in courses, and makes a tolerable, substantial, and durable walling. The roof with its somewhat steep gables rests

[4] S. C. Osborn, Madagascar, Land of the Man-Eating Tree, p. 249

on three high posts. Grasses or reeds serve as material for roofing. The entrance door and the open window are invariably on the west side to insure protection from the southeast trades.

Besides their clay huts, the Hovas have rice pits for the preservation of their rice. These are circular excavations five or six feet in diameter, and seven or eight feet deep. The form of these pits resembles a bee hive, and the sides are lined with stiff clay. These subterranean granaries are constructed with great care, and rice is kept in them for a long time.[5]

POLITICAL ACTIVITIES

The powerful Hovas early manifested their claim to superiority. These people, soon after landing on the island, forced their way up to the central plateau, found it peopled by a tribe called the Vazimba, exterminated the latter, and established effective dominion over half the island, while by a system of forts the other half was kept in check.

This tribe offered much resistance to the French, who looked upon Madagascar as their own ever since the middle of the seventeenth century. Fighting the Hovas was an uphill job for the French. Situated as they are on a plateau which was difficult of access due to the absence of roads, they were able to defend themselves with ease, and if hard pressed they would station themselves on the higher hills of the plateau. The absolute wants of daily life were few. Even the native vegetation was in their favor. Here we find the prickly pear, which forms the chief fortification of the towns and villages. A dense thicket of this surrounds every village and homestead in many parts of the country, and forms a very formidable obstacle to the attack of an enemy. The trees attain a considerable thickness, and every portion of them, trunk, leaves, flowers, and fruit is fully armed with clusters of needle-like thorns.

At various times for three centuries the French had endeavored to obtain a permanent foothold in Madagascar, but made no headway of any account until they were aided by the Sakalava, another powerful tribe in Madagascar (Fig. 1). These combined forces whipped the Hovas. When the Sakalavas saw that the French and the Hovas were in for it, they ran away hoping that the French and Hovas would do away with one another, and leave Madagascar

[5] W. Ellis, History of Madagascar, p. 301

to them as the rightful rulers. But the Hovas under British leadership were too much for the French. The French had to make peace which was not altogether one-sided, but it left the Sakalavas out. So when hard pressed the Sakalavas would withdraw to the impenetrable forests and swamps, whose poisons and jungles they knew how to withstand. These people, who formerly aided the French, have caused more trouble than any other tribe in Madagascar.

In 1896, France sent General Gallieni to Madagascar. Gallieni began the construction of a system of roads—something needed more than anything else. An elaborate botanical garden was developed where experiments are conducted for the purpose of increasing the productivity of Madagascar. Rapid development has since taken place. In many ways the province of Imerina is on the road to modern progress and prosperity.

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SOUTHWARD HO!

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INTRODUCTION

It used to be "Westward Ho!" and the great westward movement is still on in full swing. This is partly because in it is involved the other great movement which may be typified as "Southward Ho!" Geographers of Europe have asked why the great development in southern Italy and Spain. Why has Naples outgrown Milan? What is contributing to the industrial development of Barcelona? Is the rush to Florida just fad? Did Los Angeles outstrip all Pacific communities and many eastern ones thru accident? Is this north to south movement just happening to take place around the world among all advanced peoples simultaneously or does it indicate a milestone in human progress? May it not presage something the full vision of which has not yet been seen or dreamed?

THE INFLUENCE OF THE DESERT

Savage man held to his savagery, superstition, and child habits until the multiplication of population crowded some of his tribes gradually into the desert. What is it that awoke the human race to undertake civilization if it was not the desert? For countless ages savage tribes had roamed the wet tropics and the damp cool zones but when man crowded into the desert he faced cooperation or death. First this cooperation was on the tribal scale not much more complicated than the jungle tribe but desert conditions stimulated greater efforts. The desert tribe could grow quite large and yet in many cases depend on the same water supply. This process culminated in Egypt, and several great irrigation systems such as those of the Punjab. The isolation of the desert encouraged large development because of protection afforded. Did not the seed of civilization come out of the desert? Did not man first begin to rise there? What of Assyria, Babylon, and the majesty of Egypt? Whence came our Christian religion, our Arabic numerals, some of our art, our sculpture, and much of our legal background? What other regions have made such a contribution to our civilization as has the magic desert? And has it not usually been a tropical desert or at least a warm semidesert like that which borders much of the Mediterranean Sea? Has it not been a land of little rain, of little cold, and of considerable, often great, heat. Has it not been a land

of great daily fluctuations of temperature but comparatively slight yearly fluctuations? Are the yearly fluctuations which exist in the climate of these sections not chiefly those or flood waters or rain requiring foresight and preparation? In such a place life was not easy as in the damp tropics. Man could not become sleepy and indolent and yet exist. He was continually prodded by the daily variations in temperature which were as great stimuli as any to which the body can respond. He must prepare for the dry season and in order to do this he had to prepare for the flood. He could best do this by working with many others and nations grew out of tribes. With the growth of nations man rose to mental heights which it is doubtful if he has ever surpassed. This great development of mind and spread of government refers of course to the movements which culminated in China, Greece, Rome, and the empires of the Aztecs and the Incas.

These countries became so great and so extended that they reached beyond the desert which gave them birth. Conquest and expansion due to increasing populations brought their desert derived power into operation where climates were less favorable but where other resources made profit possible. Once man had learned to meet or subdue an adverse climate by buildings, clothing, and other means, that portion of the race which settled on glacial soils found wealth. Wealth is power and power is often more wealth.

Civilization in the Glaciated Lands

The abnormal productivity of glaciated lands has not been fully exploited, yet it has so well paid man that in spite of adverse climatic conditions he has put into practice the principles learned in Rome, Greece, and earlier, has applied science to his new found treasures and experimented with the things about which the Greeks so deeply thought. This wealth given learning led to the finding, studying, and using of minerals and substances before unknown. It has brought us to the era of human development which Mr. Slosson calls the creative period. First man made use of the things he found, then he shaped them to his use and now he goes farther. He not only searches systematically for everything of value or not, that may be found and not only studies out elaborate ways of adapting things to his use, but constantly creates new things for his uses. We can all name hundreds of them, the automobile, artificial silk, electric lights, radio, concrete, etc.

Thus the power of the world has gone to the north out of the desert, to the glaciated soils with their less limited rainfall and

greater arable areas, hence greater production capacity. This looks like a northward movement rather than any "Southward Ho!" It is also pointed out as proof that the climate of the middle west is the best and most stimulating for humanity. However, was the climate of Rome so very different when it was the seat of world governmental power? May not the wealth of new and fertile soils and of vast new found mineral resources carry the world power far into an adverse climate? Of course! That is exactly what has happened.

INTERMEDIATE ZONE PEOPLES LOOKING SOUTHWARD

Now what will happen next? No one can tell but does not the world wide southward movement indicate a tendency on the part of vast hordes to return to a more satisfactory climate and there seek new fields of exploitation? Of course the population will not leave the cold sections deserted or even depleted but will not great masses of people representing all or part of the surplus of population increase go south if they can and as they seem to be starting to do? Whether or not these southward moving masses may rival those left behind will be determined eventually by the wealth producing power of the warmer climes to which they go. What is this power?

SOME REGIONS OF THE FUTURE

The tropical and semitropical sections awaiting development are those of the semidesert Mediterranean type adjacent to great mountain ranges, and the damp semi-tropical and tropical type. The California coast is an illustration of the former and Florida of the latter.

California and most sections like it merge into the desert where the limited possibilities of the past are almost unbelievably enhanced by modern engineering. By the construction of large dams and efficient transportation systems the possibilities are vastly extended altho still having their limitations. Before 1900 not a dozen people lived in Imperial Valley where now dwell 50,000 on land which could easily support three or four times that number with more intensive farm practices. It will also be possible soon to irrigate more than twice as much land as that now being used[1] Desert lands of this type are extremely productive because the soils are not leached, are virgin soil, somewhat renewed by the irrigation

[1] Regulation of the Colorado River by a large dam as suggested in Boulder Canyon, and the construction of a higher canal.

process and being tropical are productive during the whole year instead of the four to six months as with the Middle West land. For several years Los Angeles County has led all others in the United States in value of agricultural products and Imperial and other similar counties rank high. Proximity to the mountains of such communities as that in which Los Angeles is located adds to the features above mentioned, the invitation to develop manufacturing using hydroelectric power. This development is seen in progress at Los Angeles for it has accepted the invitation and altho its district is separated from the main manufacturing section of the country, turned out in 1924 factory products valued at $1,202,677,000.

Whether the agricultural expansion, power, and attendant development in the type of place illustrated by Southern California may surpass that of the Middle West or not is an open question. We formerly thought that the Corn Belt was supreme, and many still do who are not so familiar with other sections. The vast mineral and commercial resources of the southwest like the water power have hardly started on their way to ultimate utilization. Certainly the maximum utilization of the resources of southern California and like sections is not in sight.

Portions of the Southeast which are near highlands have power and vast possibilities for industrial expansion. Florida and the warm Gulf Coast which illustrate the damp semitropic sections may lack power but are enormously productive thru long seasons of eleven to twelve months a year. We formerly regarded these tropical areas as unhealthful. It was said that a white man could not live continuously in them without losing his energy or giving way to diseases of the tropics. Some still cling to this idea but economic developments in some progressive tropical communities and improved sanitation have been sufficient to prove satisfactorily to many others that when we go into the tropics on a sufficiently large scale we will make most remarkable changes. The low death rate in Panama or Rio de Janeiro, in comparison with many other tropical areas illustrate how easily tropical diseases may be lessened in their virility. The damp tropics are the most productive parts of the earth's surface but the production is largely wild and uncontrolled. We do not yet know just how hard it is going to be to control it and turn it to human benefit but we have probably done many much more difficult things in our rise from savagery. When the exotic growth of the tropics is turned to beneficial production and the untold mineral wealth which doubtless exists but now lies hidden in the jungles is found, great wealth will accrue to those who

control this work. Consider the mineral wealth of the Brazilian Highlands and the possible water power along its eastern edge and within its heart. Consider these items in connection with the possible agricultural production of such a country. Consider the productive power of all these tropical sections both damp and desert. Remember that Romans, Greeks, Carthaginians, and other powerful peoples of the past have shown great energy in warm lands. May it not be quite possible that northern Europeans and their kin in this country are energetic not because the climate made them so but because they and their organizations have followed where wealth may be produced in spite of climate!

SUMMARY

The cooler zones are the seats of power and wealth today. They have not the future for expansion of power and wealth as have the tropics and subtropics. As this development goes on and these warm sections become thickly populated wealth cannot but come to their people. Will not power and world control follow?

FIELD GEOGRAPHY: A USABLE PLAN

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Geography text books and readers with their illustrations are merely inside materials. They serve to keep pupils busy (?) a part of the prescribed school hours. Information of geographic quality contained in such books may be "learned" by the pupils, but is likely to have but little meaning to them. Generally accepted pedagogy demands that concepts be formed from many well understood personal experiences. The place to get geographical experiences is out of doors—where real geography exists. But field trips are troublesome, take too much time, and the like! Why? Mainly because the teacher is undecided as to the best thing to do when in the field. Read this, maybe it will help you(?).

Any given occupied area is made up of two landscapes markedly different—the natural and the cultural. Each is the result of combinations of features and together they form the geographical landscape. The natural landscape is made up of such things as hills, valleys, plains, slopes, waters, mineral resources, vegeta-

tion, and animal life. Arrangements of these (with other) things in different ways and in different combinations bring about different types of natural landscape, such as plains, or hill country or mountain country.

The cultural landscape is made up of the things which man has put on the natural landscape. Such things are towns, homesites, fields, crops, fences, roads, bridges, and the like. Different arrangements of these things bring about different types of cultural landscape.

The two landscapes, natural and cultural, form the bases for geographical interpretation, hence field work should be concerned with:

First, observations of the things which make up the natural landscape. Write down (in notebook) such things as may easily be seen, and discuss particulars such as, parts of hills, slopes, characteristics of streams, kinds of and sources of soil, trees, native animal life. Make rough sketches of interesting observations, especially the *arrangement* of the features of the natural landscape. Choose a name for the particular type under observation, as hill landscape, upland landscape, valley landscape, mountain landscape. Decide why a particular name is desirable and stress *characteristic arrangement of the natural features.*

Second, in a similar way study the things which make up the cultural landscape. Write names of all cultural features found. Make sketches of many such. Make place maps of as many as possible, especially houses, woods, fields, pastures, and woodland. In this part of the work stress *kinds* and *arrangement. Sketches* and *maps* are *indispensable.* Select a name for the particular type of cultural landscape under observation such as, mixed farming, grain farming, manufacturing. Decide why such name is selected, and again, stress characteristics as indicated by *kinds* of things and *arrangement.*

Third, the pupils should now have a clear understanding of the meaning of natural, and cultural landscape, and should know what things are to be included in each. Now study the geographic landscape by noting easily understood relationships between activities, represented by the cultural landscape, and the natural environment, represented by the natural landscape. For example, why a fence is a certain type? Why roads are placed where they are? Why some land is cropped, and some is in forest? Write down such relationships.

Fourth, Summary. On following days have pupils summarize the trip something as follows: (1) Make lists of outstanding characteristics of the natural features of different types of natural landscape observed. (2) Make lists of outstanding features of each type of cultural landscape observed. (3) Write a brief summary of each type of "geographic landscape." Give much time to these summaries, and endeavor to give pupils training in the use of geographic terms, and phrases. Such ability is second only to the ability to make geographic interpretations.

The following description of a cultural landscape may serve as something of a guide in making summaries.

FEATURES OF THE CULTURAL LANDSCAPE*

Across this level to gently rolling plain, apparently without streams, the landscape assumes a certain degree of continuity. In this area in autumn one sees yellow fields of corn, green fields of meadow and pasture on which cattle, horses, sheep, and hogs are grazing, green fields of wheat, brown fields of stubble, and fallowed fields.

The area is irregularly dotted with clusters of trees which give the aspect of small wood lots, but set in each cluster of trees, and partially hidden thereby, is the large, well painted farmhouse. Near by in the open is the large high-gabled barn whose massiveness suggests its importance. Smaller farm buildings such as the garage, the poultry house, and the meat house, tho present are partially obscured by the tall trees. In addition to the cluster of trees, the site of the farm home is marked by the high windmill which towers above all as if it were the guardian of the dwelling.

Closer observation shows that the farm homes are systematically arranged along the wide, clay-colored, dirt roads, above which in summer float streamers of dust marking the recent passing of an automobile. The roads extend parallel with one another north-south and east-west, thus dividing the area into blocks varying in size from one-fourth to one mile in length and breadth. Each road-made block consists of square or rectangular, carefully tilled fields. Narrow lines of weeds and grasses mark the courses of the hedge and wire fences which serve as boundary lines for the roads and fields, and the tall telephone poles along the roads seem to connect the houses of the community and point the way to other communities.

*Extract from a Study of the Centralia (Missouri) Community, by N. N. Duncan, A.M., University of Missouri. 1926

A GEOGRAPHY PAGEANT

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A class of six-high pupils had completed the study of the geography of Europe. They had studied it country by country, learning the important facts of each, such as surface, natural resources, climate, occupations of people, products, etc. Special emphasis was laid upon the relation between geographical facts and the life of the people, or, in other words, they had studied from the standpoint of cause and effect.

The pupils themselves were very much interested in the study of Europe, and had, thruout the year, brought to school various articles which had come from the different countries.

It seemed to us that they could somehow use the knowledge they had gained by their study. We considered several plans and decided to have what we called, for want of a better term, a pageant. It served as a sort of graduation exercise into the next grade, and was held during the last week of the term.

ORGANIZING THE MATERIAL

Each pupil chose the country of Europe about which he or she wished to talk, and wrote that part, selecting material from various sources. They used their own textbooks, other reference material which we had in the school-room, and books from the public library.

Their parts consisted of a short description of the country, its products and people, with the emphasis upon the contribution each country is making towards the life of other countries of the world. Since every country in Europe was represented by a pupil, each part was, of necessity, brief. Only the facts about each country that are essential were mentioned. With the exception of the correction necessary in the construction of sentences, practically all the pupils spoke their parts as they themselves had written them.

In arranging the program, two facts were kept in mind, namely, the order in which the countries of Europe had come under the influence of civilization, and the geographical relationship existing between countries. Thus they appeared on the stage in groups.

Of course, there were not as many countries to be talked about as there were pupils in the school. This would have left some with no part in the program. So in order to give everybody something

to do, we arranged for folk-songs, folk-dances, and scenes characteristic of some of the countries.

Gymnastic exercises by the boys recalled the history of early Greece. An Italian Street Scene, enacted during the singing of "The Italian Street Song," followed the talk on that country. The pupil who represented Germany referred in her talk to the legends of the country, and gave a short sketch of the Lorelei, following which a group of girls sang "Die Lorelei" in German. The scene from William Tell was reminiscent of struggles of the early Swiss for freedom, while "A Leak in the Dike," in pantomime, called to mind the Hollander's eternal vigilance in the protection of his home against the sea. Following the British Isles group, boys representing characters out of the past, such as King Alfred, Wycliffe, Milton, Shakespeare, Drake, and Smith, recalled England's early contribution to progress. Other countries were represented by folk-songs and folk-dances.

Last of all came America, with its attendants, Liberty, Education, Health, Law and Character. In her talk, she acknowledged her debt to, and her dependence upon European countries, and called upon her attendants to tell how they could strengthen America and any other nation as well.

CORRELATION

Each child wore a sash of the national colors of his or her country with the name of the country printed in large letters upon it. In this way, we correlated our geography with drawing. Invitations were written in English class and sent to every sixth grade of the city. The services of the music department were required for the songs, while the physical director had charge of the exercises and dances.

In his introduction of the pageant, one of the pupils talked on the value of the study of geography, how it makes us better acquainted with other parts of the world, and how the people of one country depend upon the people of other countries for many of the necessities and luxuries of life. The same boy concluded the program by impressing upon the audience the importance of all nations being neighbors and aiming to make the brotherhood of peoples possible.

The pupils were quite pleased with the result of their efforts and went to the next grade with a greater incentive to pursue the study of geography further.